

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## SECTION 1: IDENTIFICATION

<b>Product identifier used on the label</b>	M-Line 361A-20R Solder	
<b>Other means of identification</b>	Not applicable	
<b>Recommended use of the chemical and restrictions on use</b>		
Recommended use	Welding and soldering products (with flux coatings or flux cores.), flux products.	
Restrictions on use	For professional users only.	
<b>Details of the supplier of the safety data sheet</b>		
Supplier	VISHAY MEASUREMENTS GROUP, INC.	
Address of Supplier	Post Office Box 27777 Raleigh, NC 27611 USA	
Telephone	+1 919-365-3800	
Fax	+1 919-365-3945	
E-Mail (competent person)	<a href="mailto:mm.us@vishaypg.com">mm.us@vishaypg.com</a>	
<b>Emergency telephone number</b>	1-800-424-9300	CHEMTREC (24 hours)

## SECTION 2: HAZARD(S) IDENTIFICATION

<b>Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200</b>	
Physical hazards	Not classified
Health hazards	Skin Sensitisation, Category 1 Reproductive toxicity, Category 1A Reproductive toxicity, effects on or via lactation Specific target organ toxicity — repeated exposure, Category 1
Environmental hazards	Not classified
Hazard Symbol	
Signal Word(s)	DANGER
Hazard Statement(s)	May cause an allergic skin reaction. May damage fertility. May damage the unborn child. May cause harm to breast-fed children. Causes damage to organs through prolonged or repeated exposure.
Precautionary Statement(s)	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact during pregnancy/while nursing. Do not breathe fumes/vapour from heated product. Wash hands and exposed skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention. Store locked up. Dispose of contents in accordance with local, state or national legislation.

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## Other hazards

Smoke produced during soldering will contain rosin which is an allergen and can cause pulmonary irritation and damage.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity: 0%

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Substances** Not applicable

**Mixtures** Substances in preparations / mixtures

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Tin	60 - 65	7440-31-5	231-141-8	Not classified
Lead	35 - 40	7439-92-1	231-100-4	Reproductive toxicity, Category 1A Reproductive toxicity, effects on or via lactation Specific target organ toxicity — repeated exposure, Category 1
Rosin	1 - 5	8050-09-7	232-475-7	Skin Sensitisation, Category 1
Antimony	< 1	7440-36-0	231-146-5	Hazardous to the aquatic environment, Chronic, Category 3

## SECTION 4: FIRST AID MEASURES



### Description of first aid measures

Self-protection of the first aider

Inhalation

Skin Contact

Eye Contact

Ingestion

### Most important symptoms and effects, both acute and delayed

Do not breathe fumes. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Apply artificial respiration if breathing has ceased or shows signs of failing. IF exposed or concerned: Get medical advice/attention.

IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Contaminated clothing should be thoroughly cleaned. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Molten material can cause severe burns. Do NOT try to peel molten material from the skin. Cool rapidly with water.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if eye irritation develops or persists.

If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. Get medical advice/attention if you feel unwell.

May cause an allergic skin reaction. May damage fertility. May damage the unborn child. May cause harm to breast-fed children. Causes damage to organs through prolonged or repeated exposure.

Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system. Smoke produced during soldering will contain rosin which is an allergen and can cause pulmonary irritation and damage.

High atmospheric concentrations may lead to adverse effects on the central nervous system and anaesthetic effects, including drowsiness, giddiness, headache, nausea and unconsciousness. Lead is a cumulative poison and continuous exposure to small amounts over time can raise the body's content to toxic levels. Symptoms of lead poisoning include abdominal pain, nausea,

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## Indication of any immediate medical attention and special treatment needed

Notes to a physician:

vomiting and headache. May cause gastrointestinal tract irritation if swallowed. Lead poisoning may cause lassitude, weight loss, anemia, nausea, vomiting, central nervous system damage. Molten material can cause severe burns. Treat symptomatically.

In case of burns immediately cool affected skin as long as possible with cold water.

If thought to be overexposed, the person should have a blood-lead analysis done. Patient should be kept under medical observation for at least 48 hours.

## SECTION 5: FIRE-FIGHTING MEASURES

### Extinguishing media

Suitable Extinguishing Media  
Unsuitable extinguishing Media

### Special hazards arising from the substance or mixture

As appropriate for surrounding fire.

Do not use water on fires when molten metal is present.

Flux in cored solder may ignite when the solder melts in a fire. When heated to soldering temperatures, the solvent in the flux will boil away and carry up droplets of rosin and thermal degradation products such as aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 537°C. Melted solder may liberate carbon monoxide, carbon dioxide, lead oxide fumes.

### Special protective equipment and precautions for fire fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. See Section: 8. Melted solder will solidify on cooling and can be scraped up. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

### Environmental precautions

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

### Methods and material for containment and cleaning up

Ensure suitable personal protection during removal of spillages. Allow product to cool/solidify and pick up as a solid. Transfer to a container for disposal. Recover or recycle if possible. Dispose of this material and its container as hazardous waste.

## SECTION 7: HANDLING AND STORAGE

### Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Avoid all contact. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

When molten: Keep from any possible contact with water.

Store in a well-ventilated place.

### Conditions for safe storage, including any incompatibilities

Storage temperature  
Storage life  
Incompatible materials

Ambient.

Stable under normal conditions.

Store away from sources of sulfur. Keep away from: Strong Acids, Alkalis, Chlorine and Strong oxidising agents. Use of strong acid fluxes may result in liberation of toxic lead chloride fumes.

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m <sup>3</sup> )	STEL (ppm)	STEL (mg/m <sup>3</sup> )	Note
Tin, metal	7440-31-5	-	2	-	-	NIOSH, OSHA, ACGIH
Lead and inorganic compounds (as Pb)	7439-92-1	-	0.050	-	-	NIOSH, OSHA Total Dust
		-	0.05	-	-	ACGIH, A3
Rosin core solder, pyrolysis products	8050-09-7	-	0.1	-	-	NIOSH
Rosin core solder thermal decomposition products (colophony)	8050-09-7	-(L)	-	-	-	ACGIH, SEN
Antimony	7440-36-0	-	0.5	-	-	NIOSH, OSHA, ACGIH

Note: OSHA PELs 1910.1000 TABLE Z-1/ NIOSH RELs / ACGIH TLVs

(L) Exposure by all routes should be carefully controlled to levels as low as possible

A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histological type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiological studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

SEN: Confirmed potential for worker sensitization as a result of dermal contact and/or inhalation exposure, based on weight of scientific evidence.

### Biological Exposure Indices

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Lead and inorganic compounds (as Pb)	7439-92-1	Lead in blood	200 µg/l	Not critical	*

Source: 2015 ACGIH Biological Exposure Indices (BEIs)

\* Note: Persons applying this BEI are encouraged to counsel female workers of child-bearing age about the risk of delivering a child with a PbB over the current CDC reference value.

The other components listed in Section 3 do not have biological exposure indices.

#### Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Local exhaust recommended.

#### Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Avoid breathing smoke fumes during soldering. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.

Eye/face protection



Wear eye protection with side protection (EN166). Hot/molten product: Goggles or Full face shield.

Skin protection

Hand protection: Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material:

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)



refer to the information provided by the gloves' producer.  
Hot/molten product: Use gloves with insulation for thermal protection, when needed.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.  
Hot/molten product: Wear flameproof clothing.

Respiratory protection



In case of inadequate ventilation wear respiratory protection. Open system(s):  
Wear suitable respiratory protective equipment. Recommended: Dust mask/  
Half-face mask (DIN EN 140), Filter type: P2.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Appearance	Silver - Grey metal in wire form
Odor	Not available.
Odor Threshold	Not available.
pH	Not available.
Melting Point/Freezing Point	Not available.
Initial boiling point and boiling range	Not available.
Flash Point	Not applicable.
Evaporation rate (Butyl acetate = 1)	Not applicable.
Flammability (solid, gas)	Non-flammable.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	>1 (H <sub>2</sub> O = 1)
Solubility(ies)	Insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.

## SECTION 10: STABILITY AND REACTIVITY

<b>Reactivity</b>	Stable under normal conditions.
<b>Chemical stability</b>	Stable under normal conditions.
<b>Possibility of hazardous reactions</b>	Flux in cored solder may ignite when the solder melts in a fire. Reacts vigorously with chlorine and oxidising agents. Use of strong acid fluxes may result in liberation of toxic lead chloride fumes.
<b>Conditions to avoid</b>	When molten: Keep from any possible contact with water.
<b>Incompatible materials</b>	Keep away from: Strong Acids, Alkalis, Chlorine and Strong oxidising agents. Store away from sources of sulfur.
<b>Hazardous decomposition product(s)</b>	When heated to soldering temperatures, the solvent in the flux will boil away and carry up droplets of rosin and thermal degradation products such as aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 537°C. Melted solder may liberate carbon monoxide, carbon dioxide, lead oxide fumes.

## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on toxicological effects (Substances in preparations / mixtures)

<b>Acute toxicity - Ingestion</b>	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
-----------------------------------	---

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

<b>Acute toxicity - Inhalation</b>	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 (Dusts) > 5 mg/l.
<b>Acute toxicity - Skin Contact</b>	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
<b>Skin corrosion/irritation</b>	Based upon the available data, the classification criteria are not met.
<b>Serious eye damage/irritation</b>	Based upon the available data, the classification criteria are not met.
<b>Respiratory or skin sensitization</b>	Skin Sensitisation, Category 1; May cause an allergic skin reaction.
<b>Germ cell mutagenicity</b>	Based upon the available data, the classification criteria are not met.
<b>Carcinogenicity</b>	Based upon the available data, the classification criteria are not met.
<b>Reproductive toxicity</b>	Reproductive toxicity, Category 1A/B; May damage fertility. May damage the unborn child. Reproductive toxicity, effects on or via lactation; May cause harm to breastfed babies.
<b>STOT - single exposure</b>	Based upon the available data, the classification criteria are not met.
<b>STOT - repeated exposure</b>	Specific target organ toxicity — repeated exposure, Category 1; Causes damage to organs through prolonged or repeated exposure.
<b>Aspiration hazard</b>	Based upon the available data, the classification criteria are not met.
<b>Information on likely routes of exposure</b>	
Inhalation	Possible – accidental exposure
Ingestion	Unlikely – accidental exposure
Skin Contact	Possible – accidental exposure
Eye Contact	Unlikely – accidental exposure
<b>Early onset symptoms related to exposure</b>	May cause an allergic skin reaction. Molten material can cause severe burns. Flux fumes during soldering may cause irritation and damage of mucous membranes and respiratory system. Smoke produced during soldering will contain rosin which is an allergen and can cause pulmonary irritation and damage. High atmospheric concentrations may lead to adverse effects on the central nervous system and anaesthetic effects, including drowsiness, giddiness, headache, nausea and unconsciousness.
<b>Delayed health effects from exposure</b>	May damage fertility. May damage the unborn child. May cause harm to breast-fed children. Causes damage to organs through prolonged or repeated exposure. Lead is a cumulative poison and continuous exposure to small amounts over time can raise the body's content to toxic levels. Symptoms of lead poisoning include abdominal pain, nausea, vomiting and headache. May cause gastrointestinal tract irritation if swallowed. Lead poisoning may cause lassitude, weight loss, anemia, nausea, vomiting, central nervous system damage.
<b>Other information</b>	
NTP Report on Carcinogens	Lead: Reasonably anticipated to be a human carcinogen
IARC Monographs	Lead: Group 2B - Possibly carcinogenic to humans
OSHA Designated Carcinogen	All chemicals are not listed

## SECTION 12: ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
<b>Persistence and degradability</b>	The organic part of the product is biodegradable.
<b>Bioaccumulative potential</b>	The product has low potential for bioaccumulation. (metal in wire form)
<b>Mobility in soil</b>	The product is predicted to have low mobility in soil. (metal in wire form)
<b>Other adverse effects</b>	None known.

# SAFETY DATA SHEET



Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## SECTION 13: DISPOSAL CONSIDERATIONS

### Waste treatment methods

Solder can be reclaimed. This material and its container must be disposed of as hazardous waste. Dispose of wastes in an approved waste disposal facility.

### Additional Information

Dispose of contents in accordance with local, state or national legislation.

## SECTION 14: TRANSPORT INFORMATION

(Not classified according to the United Nations 'Recommendations on the Transport of Dangerous Goods')

	<b>ADR/RID</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	Not classified	Not classified	Not classified
<b>UN proper shipping name</b>	Not classified	Not classified	Not classified
<b>Transport hazard class(es)</b>	Not classified	Not classified	Not classified
<b>Packing group</b>	Not classified	Not classified	Not classified
<b>Environmental hazards</b>	Not classified	Not classified as a Marine Pollutant.	Not classified
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable		
<b>Special precautions for user</b>	See Section: 2		

## SECTION 15: REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

#### US Federal Regulations

TSCA (Toxic Substance Control Act)

Tin: Subject to 25,000 lb reporting threshold  
Lead: Subject to 25,000 lb reporting threshold  
Rosin: Subject to 25,000 lb reporting threshold  
Antimony: Subject to 25,000 lb reporting threshold  
All chemicals are not listed

EPCRA/SARA Section 302 Extremely Hazardous Substances

EPCRA Section 313 Toxics Release Inventory (TRI) Program

Lead: PBT Chemical - No De Minimis limit, except for supplier notification purposes; Reporting Threshold = 100 pounds  
Antimony: De Minimis limit: 1%

NIOSH Occupational Carcinogen List

OSHA List of highly hazardous chemicals, toxics and reactives

All chemicals are not listed  
All chemicals are not listed

NTP Report on Carcinogens (RoC) List

Poison Prevention Packaging Act

Lead: Reasonably anticipated to be a human carcinogen  
All chemicals are not listed

#### US State Regulations

California State, Proposition 65 List

California State, Safer Consumer Products Regulations

Lead: Safe harbor level - NSRL: 15 (oral) ug/day; MADL: 0.5 ug/day

Tin: Initial Candidate Chemicals List

Lead: Initial Candidate Chemicals List, Group Member List: Lead and Lead Compounds

Antimony: Candidate Chemicals List, Group Member List: Antimony and Antimony Compounds

Maine State, Toxic Chemicals in Children's Products Act

New Jersey State Worker and Community RTK Act

Lead: COC list

Tin: RTKHSL. SHHSL

Lead: RTKHSL. SHHSL

Antimony: RTKHSL

Pennsylvania State, Worker and Community RTK Act

Tin: Hazardous Substance List

Lead: Hazardous Substance List. Environmental Hazard List

Antimony: Hazardous Substance List. Environmental Hazard List

Rhode Island State, Hazardous Substances RTK Act

Tin: Hazardous Substance List

Lead: Hazardous Substance List

Antimony: Hazardous Substance List

#### Non-Regional

IARC Monographs, List of Classifications

Lead: Group 2B

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 03 May 2017  
Date of First Issue: 07 August 2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Updated substance / mixture classification. New SDS Regulation compliant with HazCom 2012 format, all sections have been updated to include new information. Please review SDS with care.

Version 4.0  
Revision Date 03 May 2017  
Date of First Issue 07 August 2012

### References:

Existing Safety Data Sheet (SDS), Harmonised Classification(s) for Rosin (CAS# 8050-09-7), Existing ECHA registration(s) for Rosin (CAS# 8050-09-7), Tin (CAS# 7440-31-5) and Antimony (CAS# 7440-36-0), and the Committee for Risk Assessment (RAC) Opinion (05.12.13) for Lead (CAS# 7439-92-1): <http://echa.europa.eu/documents/10162/57ceb1ac-aafc-4852-9aa5-db81bcb04da3>

GHS Classification of the substance or mixture	Classification Procedure
Skin Sensitisation, Category 1	Threshold Calculation
Reproductive toxicity, Category 1A	Threshold Calculation
Reproductive toxicity, effects on or via lactation	Threshold Calculation
Specific target organ toxicity — repeated exposure, Category 1	Threshold Calculation

### LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists  
BEI: Biological Exposure Indices (ACGIH)  
IARC: International Agency for Research on Cancer  
Irr: Irritation  
NIOSH: National Institute of Occupational Safety and Health  
NTP: National Toxicology Program  
OSHA: The Occupational Safety & Health Administration  
PBT: Persistent, Bioaccumulative and Toxic  
PEL: Permissible exposure limit

REL: Recommended exposure limit  
SCL: Specific Concentration Limit  
Skin<sup>2</sup>: Risk of overexposure via dermal contact  
STEL: Short Term Exposure Limit  
TLV: Threshold Limit value  
TSCA: Toxic Substance Control Act  
TWA: Time Weighted Average  
URT: Upper respiratory tract  
vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

### Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.